

What is claimed is:

1. An exhaust gas purifying apparatus for an internal combustion engine comprising:

 a NOx selective reduction catalyst disposed in an exhaust passage of said internal combustion engine for purifying NOx in exhaust gases flowing through said exhaust passage under the existence of a reducing agent;

 a NOx detector disposed in said exhaust pipe at a location downstream of said NOx selective reduction catalyst for detecting a NOx concentration in exhaust gases;

 a reducing agent supply unit for supplying the reducing agent to said NOx selective reduction catalyst; and

 supply amount determining means for determining the amount of the reducing agent supplied to said NOx selective reduction catalyst by said reducing agent supply unit such that the NOx concentration detected by said NOx detector reaches an extreme value.

2. An exhaust gas purifying apparatus for an internal combustion engine according to claim 1, further comprising:

 an upstream NOx detector disposed in said exhaust passage at a location upstream of said NOx selective reduction catalyst for detecting the NOx concentration in exhaust gases; and

 exhaust gas volume detecting means for detecting an exhaust gas volume of said internal combustion engine,

 wherein said supply amount determining means includes:

 basic supply amount determining means for determining a basic supply amount of the reducing agent to said NOx selective

reduction catalyst in accordance with the NO_x concentration detected by said upstream NO_x detector and the detected exhaust gas volume; and

correcting means for correcting said determined basic supply amount of the reducing agent such that the NO_x concentration detected by said NO_x detector reaches an extreme value.

3. An exhaust gas purifying apparatus for an internal combustion engine according to claim 1, further comprising a reducing agent production unit for producing the reducing agent using at least a fuel for said internal combustion engine as a raw material.

4. An exhaust gas purifying apparatus for an internal combustion engine according to claim 3, wherein said reducing agent is ammonia.

5. An exhaust gas purifying method for an internal combustion engine comprising the steps of:

purifying NO_x in exhaust gases flowing through an exhaust passage using a NO_x selective catalyst under the existence of a reducing agent;

detecting a NO_x concentration in exhaust gases;

supplying the reducing agent to a NO_x selective reduction catalyst; and

determining the amount of the reducing agent supplied to said NO_x selective reduction catalyst such that the detected NO_x concentration reaches an extreme value.

6. An exhaust gas purifying method for an internal combustion engine according to claim 5, further comprising the steps of:

detecting the NO_x concentration in exhaust gases in said exhaust passage at a location upstream of said NO_x selective reduction catalyst; and

detecting an exhaust gas volume of said internal combustion engine,

wherein said step of determining the amount of the reducing agent includes:

determining a basic supply amount of the reducing agent to said NO_x selective reduction catalyst in accordance with the NO_x concentration detected at the location upstream of said NO_x selective reduction catalyst and the detected exhaust gas volume; and

correcting said determined basic supply amount of the reducing agent such that the detected NO_x concentration reaches an extreme value.

7. An exhaust gas purifying method for an internal combustion engine according to claim 5, further comprising the step of producing the reducing agent using at least a fuel for said internal combustion engine as a raw material.

8. An exhaust gas purifying method for an internal combustion engine according to claim 7, wherein said reducing agent is ammonia.

9. An engine control unit including a control program for causing a computer to execute an exhaust gas purifying method for an internal combustion engine,

wherein said control program causes the computer to instruct an exhaust gas purifying apparatus to purify NO_x in exhaust gases flowing through an exhaust passage under the existence of a reducing agent; instruct a NO_x sensor to detect a NO_x concentration in exhaust gases; instruct a reducing agent supply unit to supply the reducing agent to a NO_x selective reduction catalyst; and determine the amount of the reducing agent supplied to said NO_x selective reduction catalyst such that the detected NO_x concentration reaches an extreme value.

10. An engine control unit according to claim 9, wherein said control program further causes the computer to instruct an upstream NO_x sensor to detect the NO_x concentration in exhaust gases a location upstream of said NO_x selective reduction catalyst; instruct exhaust gas volume detecting means to detect an exhaust gas volume of said internal combustion engine; determine a basic supply amount of the reducing agent to said NO_x selective reduction catalyst in accordance with the NO_x concentration detected at the location upstream of said NO_x selective reduction catalyst and the detected exhaust gas volume; and correct said determined basic supply amount of the reducing agent such that the detected NO_x concentration reaches an extreme value.

11. An engine control unit according to claim 9, wherein said control program further causes the computer to instruct a reducing agent production unit to produce the reducing agent using at least a fuel for said internal combustion engine as a raw material.

12. An engine control unit according to claim 11, wherein said

reducing agent is ammonia.